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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/689,131	10/12/2000	John M. Hetzel, JR.	461568-014	8089

27805 7590 10/06/2004
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EXAMINER

STAICOVICI, STEFAN

ART UNIT PAPER NUMBER

1732

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/689,131

Applicant(s)

HETZEL,, JOHN M.

Examiner

Stefan Staicovici

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on July 8, 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37, 42-57 and 65-67 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37, 42-57 and 65-67 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. Applicant's amendment filed July 8, 2004 has been entered. Claims 1, 11-13, 17, 23, 33-36, 42 and 52-55 have been amended. Claims 38-41 and 58-64 have been canceled. New claims 66-67 have been added. Claims 1-37, 42-57 and 65-67 are pending in the instant application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-4, 8, 11, 17, 21-22, 42, 44-45, 49, 52, 56-57 and 65-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Medwell (US Patent No. 4,656,674) in view of JP 64-68572.

Medwell ('674) teaches the basic claimed process of forming a protective helmet (generally continuous hemispherical bowl) including, providing a thermosetting resin pre-impregnated fabric (fiber-based filler), positioning said thermosetting resin impregnated fabric into a mold having a male and a female mold half and molding said thermosetting resin impregnated fabric into a protective helmet under heat and pressure by curing said thermosetting resin (see col. 2, line 65 through col. 3, line 14). Since the fabric is pre-impregnated it is submitted that curing occurs after resin impregnation.

Regarding claims 1, 17 and 42, Medwell ('674) do not teach a thermosetting resin impregnated fabric having ceramic particles mixed therein. JP 64-68572 teaches a process for improving the heat reflectivity of a resin impregnated fabric including, mixing 0.1-50% by weight ceramic particles, having a size of less than 20 microns, with a thermosetting resin and, impregnating a fibrous sheet with said polymer resin/ceramic particle mixture (see Abstract). Therefore, it would have been obvious for one of ordinary skill in the art to have mixed 0.1-50% by weight ceramic particles of less than 20 microns as taught by JP 64-68572 with the thermosetting resin in the process of Medwell ('674) because, JP 64-68572 specifically teach that ceramic particles radiate far-infrared rays, hence teaching increased protection from external infrared radiation, hence improving the protective characteristics of the resulting molded helmet and also because, both references teach a resin impregnated fabric.

In regard to claims 8 and 49, Medwell ('674) teaches a polyester thermosetting resin (see col. 3, lines 9-14).

Specifically regarding claims 11, 52 and 66, Medwell ('674) teaches polyaramid fibers (see col. 3, lines 5-9).

Regarding claims 56-57, it is submitted that after curing, said thermosetting resin is rigid. Further, it is submitted that the protective helmet Medwell ('674) meets the NFP Standards in order to function as described.

In regard to claim 65, Medwell ('674) teaches that the fabric is pre-impregnated with either a polyester or a phenolic thermosetting resin before cutting, hence before curing (see col. 1, lines 32-35). It is submitted that a fabric prepreg impregnated with a polyester resin or

phenolic resin is impregnated with a liquid resin because said polyester and phenolic resins are liquid.

Specifically regarding claims 3-4, 21-22 and 44-45, JP 64-68572 teaches a mixture including, a thermosetting resin and 0.1-50% by weight ceramic particles having a size of less than 20 microns (see Abstract). Therefore, it would have been obvious for one of ordinary skill in the art to have mixed 0.1-50% by weight ceramic particles of less than 20 microns as taught by JP 64-68572 with the thermosetting resin in the process of Medwell ('674) because, JP 64-68572 specifically teach that ceramic particles radiate far-infrared rays, hence teaching increased protection from external infrared radiation, hence improving the protective characteristics of the resulting molded helmet and also because, both references teach a resin impregnated fabric.

Regarding claim 67, Medwell ('674) teaches providing a thermosetting resin pre-impregnated fabric (fiber-based filler) and then positioning said thermosetting resin impregnated fabric into a mold having a male and a female mold half and molding said thermosetting resin impregnated fabric into a protective helmet under heat and pressure by curing said thermosetting resin (see col. 2, line 65 through col. 3, line 14).

4. Claims 9-10 and 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Medwell (US Patent No. 4,656,674) in view of JP 64-68572 and in further view of Hetzel, Jr. *et al.* (US Patent No. 6,098,197).

Medwell ('674) in view of JP 64-68572 teach the basic claimed process as described above.

Regarding claims 9 and 50, Medwell ('674) in view of JP 64-68572 do not teach a vinyl ester thermosetting resin. Hetzel, Jr. *et al.* ('197) a process for making a protective helmet including, providing a male (26) and a female (28) mold, positioning a fiber reinforced sheet (16) in said female mold (28), pouring a thermosetting resin (18) onto said fiber reinforced sheet (16), closing said male mold onto said female mold and curing under heat and pressure said resin to form a protective helmet (see col. 6, lines 41-60 and Figure 6). Further, Hetzel, Jr. *et al.* ('197) teaches that polyester and vinyl ester are equivalent alternatives for molding a protective helmet (see col. 3, lines 9-14). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a vinyl ester thermosetting resin as taught by Hetzel, Jr. *et al.* ('197) in the process of Medwell ('674) in view of JP 64-68572, because Hetzel, Jr. *et al.* ('197) specifically teach that polyester and vinyl ester thermosetting resins are equivalent alternatives for molding a protective helmet.

In regard to claims 10 and 51, Hetzel, Jr. *et al.* ('197) teach that a vinyl ester thermosetting resin includes a catalyst, hence it is submitted that said catalyst was applied prior to impregnating said fibrous sheet with said thermosetting resin (see col. 6, lines 44-46). Therefore, it would have been obvious for one of ordinary skill in the art to have added a catalyst vinyl ester to a thermosetting resin as taught by Hetzel, Jr. *et al.* ('197) in the process of Medwell ('674) in view of JP 64-68572, because Hetzel, Jr. *et al.* ('197) specifically teach that polyester and vinyl ester thermosetting resins are equivalent alternatives for molding a protective helmet.

5. Claims 12-13, 15 and 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Medwell (US Patent No. 4,656,674) in view of JP 64-68572 and in further view of Hastings (US Patent No. 5,794,271).

Medwell ('674) in view of JP 64-68572 teach the basic claimed process as described above.

Regarding claims 12-13, 15 and 53-55, although Medwell ('674) teaches providing additional reinforcement layers (see col. 2, lines 60-65), Medwell ('674) in view of JP 64-68572 does not specifically teach a fiber-based sheeting, especially a woven/non-woven glass fiber sheeting. Hastings ('271) teaches a polymeric protective helmet including, providing a non-woven glass fiber layer (32) (see col. 3, lines 6-20 and Figure 3). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a fiber-based sheeting, especially a non-woven glass fiber sheeting as taught by Hastings ('271) in the bowl portion of the protective helmet formed by the process of Medwell ('674) in view of JP 64-68572 because, Hastings ('271) specifically teaches that such a sheeting provides for improved impact resistance, hence providing for an improved product and also because, Medwell ('674) and Hastings ('271) teach similar end-products.

6. Claims 1, 3-5, 8, 11-13, 15-19, 21-23, 27, 33-36, 42, 44-46, 49, 52-57 and 65-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hastings (US Patent No. 5,794,271) in view of JP 64-68572.

Hastings ('271) teaches the basic claimed process of forming a protective helmet (generally hemispherical bowl portion) including providing a first layer of thermosetting resin

(18) on a mold surface, placing a second layer including a fiber reinforced woven fabric (20) over said first layer of thermosetting resin (18), spreading a third layer of said thermosetting resin (22) onto said fiber reinforced woven fabric layer (20) and molding (curing thermosetting resin) said layers to form said protective helmet (see col. 2, lines 38-65). It is submitted that because Hastings ('271) teaches a molding process, that a female and a male mold are taught in order to obtain a molded article as shown in Figure 1. Further, it is submitted that because the third layer of said thermosetting resin (22) is being *spread* (emphasis added) prior to hardening (see col. 1, lines 39-45), then it is in a fluid state and as such impregnation of said fiber reinforced woven fabric layer (20) by said third layer of said thermosetting resin (22) begins to occur prior to curing because said thermosetting resin (22) is in a fluid (liquid) state.

Regarding claims 1, 17, 23, 36 and 42, Hastings ('271) does not teach a thermosetting resin impregnated fabric having ceramic particles mixed therein. JP 64-68572 teaches a process for improving the heat reflectivity of a resin impregnated fabric including, mixing 0.1-50% by weight ceramic particles, having a size of less than 20 microns, with a thermosetting resin and, impregnating a fibrous sheet with said polymer resin/ceramic particle mixture (see Abstract). Therefore, it would have been obvious for one of ordinary skill in the art to have mixed 0.1-50% by weight ceramic particles of less than 20 microns as taught by JP 64-68572 with the thermosetting resin in the process of Hastings ('271) because, JP 64-68572 specifically teach that ceramic particles radiate far-infrared rays, hence teaching increased protection from external infrared radiation, hence improving the protective characteristics of the resulting molded helmet and also because, both references teach a resin impregnated fabric.

Further regarding claims 18-19, 23 and 36, it should be noted that Hastings ('271) teaches a first thermosetting resin layer (18), a fiber layer (20) and a second thermosetting layer (22) placed onto said fiber layer (20).

In regard to claims 5, 27 and 46, Hastings ('271) teaches that the epoxy layer penetrates second layer (20) to completely saturate said second layer (20) (see col. 2, line 66 through col. 3, line 5). Further, upon curing, it is submitted that "complete saturation" requires that the epoxy resin flow around the fibers and bond to the fibers during the curing process.

In regard to claims 8 and 49, Hastings ('271) teaches an epoxy thermosetting resin (see col. 2, lines 41-42).

Specifically regarding claims 11, 52 and 66, Hastings ('271) teaches aramid fibers (see col. 2, lines 50-51).

Regarding claims 12-13, 15, 33-35 and 53-55, although Hastings ('271) teaches a polymeric protective helmet having a non-woven glass fiber layer (32) bonded to woven fiber layer (20) (see col. 3, lines 6-20 and Figure 3), Hastings ('271) does not teach that non-woven glass fiber later includes the bowl portion. However, it is noted that Hastings ('271) teaches that the non-woven glass fiber layer (32) is positioned at critical areas of the resulting helmet because it provides increased impact resistance, hence teaching that the location of the non-woven glass fiber is dependent on the ultimate function of the helmet. Hence, it is submitted that it would have been obvious for one of ordinary skill in the art to have provided a non-woven glass fiber layer in the bowl portion of the helmet obtained by the process of Hastings ('271) in view of JP 64-68572 because, Hastings ('271) specifically teaches that the non-woven glass fiber layer (32)

is positioned at critical areas of the resulting helmet since it provides increased impact resistance, hence providing for an improved product. Hence,

In regard to claim 16, Hastings ('271) teaches placing a fiber layer (20) onto a first resin layer (18) and then placing a second resin layer (22) onto said fiber layer (20). Hence, it is submitted that said fiber layer (20) is positioned in the mold prior to resin impregnation.

Regarding claims 56-57, it is submitted that after curing, said thermosetting resin is rigid. Further, it is submitted that the protective helmet of Hastings ('271) meets the NFP Standards in order to function as described.

In regard to claim 65 and in further regard to claim 23, it is submitted that because the third layer of said thermosetting resin (22) is being *spread* (emphasis added) prior to hardening (see col. 1, lines 39-45), then it is in a fluid state and as such impregnation of said fiber reinforced woven fabric layer (20) by said third layer of said thermosetting resin (22) begins to occur prior to curing because said thermosetting resin (22) is in a fluid (liquid) state.

Specifically regarding claims 3-4, 21-22 and 44-45, JP 64-68572 teaches a mixture including, a thermosetting resin and 0.1-50% by weight ceramic particles having a size of less than 20 microns (see Abstract). Therefore, it would have been obvious for one of ordinary skill in the art to have mixed 0.1-50% by weight ceramic particles of less than 20 microns as taught by JP 64-68572 with the thermosetting resin in the process of Hastings ('271) because, JP 64-68572 specifically teach that ceramic particles radiate far-infrared rays, hence teaching increased protection from external infrared radiation, hence improving the protective characteristics of the resulting molded helmet and also because, both references teach a resin impregnated fabric.

Regarding claim 67, Hastings ('271) teaches spreading a third layer of said thermosetting resin (22) onto said fiber reinforced woven fabric layer (20) and molding (curing thermosetting resin) said layers to form said protective helmet (see col. 2, lines 38-65).

7. Claims 2, 20, 24, 37 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hastings (US Patent No. 5,794,271) in view of JP 64-68572 and in further view of JP 55-3320.

Hastings ('271) in view of JP 64-68572 teaches the basic claimed process as described above.

Regarding claims 2, 20, 24, 37 and 43, Hastings ('271) in view of JP 64-68572 do not teach chopping the ceramic particles. JP 55-3320 teaches forming ceramic particles by grinding (chopping) a ceramic blank. Therefore, it would have been obvious for one of ordinary skill in the art to have formed ceramic particles by grinding (chopping) a blank as taught by JP 55-3320 in the process of JP 64-68572 because, JP 55-3320 specifically teaches forming ceramic particles by grinding, whereas JP 64-68572 teaches a process for impregnating a fabric with a mixture containing ceramic particles and thermosetting resin. Further, it should be noted that JP 64-68572 specifically teaches a process for improving the heat reflectivity of a resin impregnated fabric including, mixing 0.1-50% by weight ceramic particles, having a size of less than 20 microns, with a thermosetting resin and, impregnating a fibrous sheet with said polymer resin/ceramic particle mixture (see Abstract).

In regard to claims 25 and 26, JP 64-68572 teaches a mixture including, a thermosetting resin and 0.1-50% by weight ceramic particles having a size of less than 20 microns (see

Abstract). Therefore, it would have been obvious for one of ordinary skill in the art to have mixed 0.1-50% by weight ceramic particles of less than 20 microns as taught by JP 64-68572 with the thermosetting resin in the process of Hastings ('271) in view of JP 55-3320 because, JP 64-68572 specifically teach that ceramic particles radiate far-infrared rays, hence teaching increased protection from external infrared radiation, hence improving the protective characteristics of the resulting molded helmet and also because, both references teach a resin impregnated fabric.

8. Claims 6-7, 9-10, 14, 28-32, 47-48, 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hastings (US Patent No. 5,794,271) in view of JP 64-68572 and in further view of Hetzel, Jr. *et al.* (US Patent No. 6,098,197).

Hastings ('271) in view of JP 64-68572 teaches the basic claimed process as described above.

Regarding claims 9, 31 and 50, Hastings ('271) in view of JP 64-68572 do not teach a vinyl ester thermosetting resin. Hetzel, Jr. *et al.* ('197) a process for making a protective helmet including, providing a male (26) and a female (28) mold, positioning a fiber reinforced sheet (16) in said female mold (28), pouring a thermosetting resin (18) onto said fiber reinforced sheet (16), closing said male mold onto said female mold and curing under heat and pressure said resin to form a protective helmet (see col. 6, lines 41-60 and Figure 6). Further, Hetzel, Jr. *et al.* ('197) teach that polyester and vinyl ester are equivalent alternatives for molding a protective helmet (see col. 3, lines 9-14). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a vinyl ester thermosetting resin as taught by Hetzel, Jr. *et al.* ('197) in the

process of Hastings ('271) in view of JP 64-68572, because Hetzel, Jr. *et al.* ('197) specifically teach that polyester and vinyl ester thermosetting resins are equivalent alternatives for molding a protective helmet.

In regard to claims 10, 30, 32 and 51, Hetzel, Jr. *et al.* ('197) teach that a vinyl ester thermosetting resin includes a catalyst, hence it is submitted that said catalyst was applied prior to impregnating said fibrous sheet with said thermosetting resin (see col. 6, lines 44-46). Therefore, it would have been obvious for one of ordinary skill in the art to have added a catalyst vinyl ester to a thermosetting resin as taught by Hetzel, Jr. *et al.* ('197) in the process of Hastings ('271) in view of JP 64-68572, because Hetzel, Jr. *et al.* ('197) specifically teach that polyester and vinyl ester thermosetting resins are equivalent alternatives for molding a protective helmet. Further regarding claim 30, it should be noted that Hastings ('271) teaches an epoxy thermosetting resin (see col. 2, lines 41-42). It should be noted that in claim 32, it is submitted that the catalyst is mixed with the thermosetting resin prior to being molded in order to allow homogeneous distribution of said catalyst within said thermosetting resin and as such to function as described by Hetzel, Jr. *et al.* ('197).

Specifically regarding claim 14, Hetzel, Jr. *et al.* ('197) teach a firefighter helmet having a thickness of 0.08 inches (approximately 0.09 inches) (col. 5, line 37). It would have been obvious for one of ordinary skill to have provided a fibrous layer having a thickness of approximately 0.09 inches (0.08 inches) as taught by Hetzel, Jr. *et al.* ('197) in the process of Hastings ('271) in view of JP 64-68572, because Hetzel, Jr. *et al.* ('197) specifically teach that such a thickness is desirable for a protective helmet, which is taught by Hastings ('271).

Regarding claims 6-7, 28-29, 47-48, it is submitted that molding time, temperature and pressure are result-effective variables. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Further, it should be noted that Hetzel, Jr. *et al.* ('197) teach a molding temperature of 100 to 200 °F, a molding pressure of 300 to 500 psi and a molding time of 6-9 minutes (see col. 6, lines 57-68). Therefore, it would have been obvious for one of ordinary skill in the art to have determined an optimum molding temperature, pressure and time as taught by Hetzel, Jr. *et al.* ('197) in the process of Hastings ('271) in view of JP 64-68572 because, Hetzel, Jr. *et al.* ('197) teach molding (curing) conditions for an epoxy thermosetting resin, which is the material, taught by Hastings ('271) and as such both references teach compression molding of epoxy thermosetting impregnated fabric.

Response to Arguments

9. Applicant's remarks filed July 8, 2004 have been considered.
10. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).
11. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Applicant argues that since “the Japanese reference discloses the use of ceramic-infused resin to guide and trap heat therein...one of ordinary skill in the art would not be motivated to use the heat-retaining ceramic of the Japanese reference in the helmet of the Medwell reference” because, “the helmet disclosed in the Medwell reference” is a “firefighter equipment” in which it is “desired to minimize heat retention and keep the surface temperature low” (see page 14 of the amendment filed July 8, 2004). Further, Applicant presents similar arguments as to the teachings of Hastings (‘271) (see page 15 of the amendment filed July 8, 2004). In response it is noted that:

(a) Medwell (‘674) and Hastings (‘271) teach a process for making a “composite helmet” that has ballistic/impact properties and does not refer to heat-retaining properties. Hence, it is noted that the teachings of Medwell (‘674) and Hastings (‘271) are not restricted to “firefighting equipment” (see Abstract);

(b) It is noted that features upon which applicant relies (i.e., firefighting equipment) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993);

(c) Medwell (‘674) and Hastings (‘271) teach a process for making a “composite helmet” that has ballistic/impact properties. JP 64-68572 teaches a process for improving the heat reflectivity of a resin impregnated fabric including, mixing 0.1-50% by weight ceramic

particles, having a size of less than 20 microns, with a thermosetting resin and, impregnating a fibrous sheet with said polymer resin/ceramic particle mixture (see Abstract). Hence, it is submitted that heat-retention is a desirable property in a ballistic/impact helmet. Therefore, it would have been obvious for one of ordinary skill in the art to have mixed 0.1-50% by weight ceramic particles of less than 20 microns as taught by JP 64-68572 with the thermosetting resin in the process of Medwell ('674) or Hastings ('271) because, JP 64-68572 specifically teach that ceramic particles radiate far-infrared rays, hence teaching increased protection from external infrared radiation, hence improving the protective characteristics of the resulting molded helmet and also because, both references teach a resin impregnated fabric.

(d) It is noted that under MPEP §2123, a "reference may be relied upon for all that it would have reasonably suggested to one of ordinary skill in the art." In this case, JP 64-68572 teaches that by adding a ceramic material, the fabric acts as a heat shield. It is submitted that whether heat is retained in the interior of the helmet or is prevented from entering the helmet from the exterior are equivalent functions of a heat transfer shield, which is taught by JP 64-68572

12. Applicant argues that "the layer 20/32 of the Hastings reference is not a generally hemispherical bowl portion" but instead "the layer 20/32 is located only at the ear-protecting sides of the helmet" (see page 15 of the amendment filed July 8, 2004). In response, it is noted that this argument is drawn to a newly presented claim limitation not previously presented. However, the newly argued claim limitation has been rejected in this Office Action as set forth above.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (571) 272-1208. The examiner can normally be reached on Monday-Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Colaianni, can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stefan Staicovici, PhD



Primary Examiner

10/04/04

AU 1732

October 4, 2004